IN THE CLAIMS

Claim 1 (original): A method of measuring a signal transit time in a medical liquid required by a signal to pass through a measurement zone from an ultrasonic transmitter (2) to an ultrasonic receiver (3), wherein a line carrying the medical liquid is arranged in the measurement zone, or for measuring changes in the signal transit time, whereby

the ultrasonic transmitter (2) emits a step-like signal (10), and

the step-like signal (10) passes through the measurement zone, resulting in an oscillation-like received signal (12), oscillating about a resting level (11) on the ultrasonic receiver (3), the received signal being sampled at regular intervals Δt and detected,

the oscillator-like received signal (12) is checked on the basis of a selection criterion at least during a half-period (14, 15) to determine whether it is the received signal produced by the step-like signal (10), and

when the result of this check is positive, the signal transit time or the change in the signal transit time is determined with the help of an interpolated or extrapolated contact point (20, 21) of the oscillator-like received signal (12) with the resting level (11) in a received signal-time diagram.

Claim 2 (original): The method according to Claim 1, characterized in that the point used as the interpolated or extrapolated contact point is the point (21) in the received signal-time diagram at which the oscillator-like received signal (12) at the beginning of the first half-period (14) differs from the resting level (11), and the signal transit time is derived from the signal transit time thus determined.

Claim 3 (original): The method according to Claim 1, characterized in that the point (20) in the received signal-time diagram at which the oscillator-like received signal (12) intersects the resting level (11) after the first half-period (14) is determined as the interpolated or extrapolated contact point, and the change in signal transit time is derived from the time thus determined.

Claim 4 (currently amended): The method according to ~~one of the preceding claims~~ claim 1, characterized in that the area enclosed between the oscillator-like received signal (12) and the resting level (11) is determined during the half-period (14).

Claim 5 (original): The method according to Claim 4, characterized in that the area thus determined is compared with a reference value as the selection criterion.

Claim 6 (original): The method according to Claim 4, characterized in that the subsequent half-period (15) is also sampled and detected, and the area enclosed between the oscillator-like received signal (12) and the resting level (11) is determined during the subsequent half-period (15).

Claim 7 (original): The method according to Claim 6, characterized in that the area enclosed between the oscillator-like received signal (12) and the resting level (11) is compared with a reference value as the selection criterion during a subsequent half-period (15).

Claim 8 (currently amended): The method according to ~~one of Claims 1 through 3~~ claim 1, characterized in that the extreme value (18) of the oscillator-like received signal (12) is determined during the half-period (14) and is compared with a reference value.

Claim 9 (original): The method according to Claim 8, characterized in that the subsequent half-period (15) is sampled and detected and the extreme value (19) of the oscillator-like received signal (12) is determined during the subsequent half-period (15) and compared with a reference value.

Claim 10 (currently amended): The method according to ~~one of the preceding claims~~ claim 1, characterized in that the duration of one or more half-periods (14, 15) of the oscillator-like received signal (12) is determined as the selection criterion and is compared with a reference value.

Claim 11 (currently amended): The method according to ~~one of the preceding claims~~ claim 1, characterized in that the resting level (11) is determined as the average of received signal samples (13) preceding the half-period (14).

Claim 12 (currently amended): The method according to Claim 4 ~~or 6~~, characterized in that the areas thus determined are analyzed as a measure of the attenuation of the signal.

Claim 13 (currently amended): The method according to ~~one of the preceding claims~~ claim 1, characterized in that the medical liquid is blood, dialyis liquid or an infusion liquid.

Claim 14 (currently amended): A device for use of the method according to ~~one of Claims 1 through 13~~ claim 1, comprising

an ultrasonic transmitter (2) for emitting the step-like signal (10),

an ultrasonic receiver (3) which is separated from the ultrasonic transmitter (2) by the measurement zone for delivering a received signal (12) which oscillates about a resting level (11) as the response to the step-like (10) signal passing through the measurement zone,

a line (1) arranged in the measurement zone carrying a medical liquid,

an analyzer unit (6) that is connected to the ultrasonic transmitter (2) and the ultrasonic receiver (3),

whereby the analyzer unit (6) receives synchronized signals for sending the transmission signal and has a sampling device for sampling and storing the oscillator-like received signal (12) at regular intervals Δt,

whereby the analyzer unit (6) is also suitable for checking on the oscillator-like received signal (12) on the basis of a selection criterion at least during a half-period (14, 15) to determine whether it is the received signal caused by the step-like signal (10), and

if the result of the test is positive, to determine the signal transit time or the change in the signal transit time of an interpolated or extrapolated contact point (20, 21) of the oscillator-like received signal (12) with a resting level (11) in a received signal-time diagram.

Claim 15 (original): The device according to Claim 14, characterized in that the analyzer unit (6) is also suitable for analyzing the signal transit time and/or the change in signal transit time as a measure of the composition and/or the change in composition of the medical liquid on the basis of stored information.

Claim 16 (currently amended): The device according to Claims 14 ~~or~~ ~~15~~, characterized in that the medical liquid is blood, dialysis liquid or an infusion liquid.

Claim 17 (original): The device according to Claim 16, characterized in that it is a blood volume sensor.

Claim 18 (original): The device according to Claim 17, characterized in that it is also an air detection sensor.